

IN THE CLAIMS:

Please CANCEL claim 13, without prejudice or disclaimer, as this claim was withdrawn from consideration.

Please CANCEL claim 4, without prejudice or disclaimer.

Please AMEND the claims and ADD new claims as follows:

1. (CURRENTLY AMENDED) A Raman optical amplifier that amplifies multi-wavelength light, comprising:
 - an optical amplification medium into which the multi-wavelength light is inputted;
 - a pumping light source supplying pumping light to said optical amplification medium;
 - an auxiliary light source generating auxiliary light with a wavelength shorter than a center wavelength of the multi-wavelength light;
 - an optical device guiding the auxiliary light to said optical amplification medium in the same direction as that of the multi-wavelength light; and
 - an auxiliary light controller controlling the optical power of the auxiliary light based on the input power of the multi-wavelength light,

wherein said auxiliary light controller changes the optical power of the auxiliary light with a prescribed response time based on a change in input power of the multi-wavelength light.
2. (ORIGINAL) The Raman optical amplifier according to claim 1, wherein the wavelength of the auxiliary light is the same as that of the pumping light.
3. (ORIGINAL) The Raman optical amplifier according to claim 1, wherein the pumping light is guided to said optical amplification medium in the opposite direction as that of the multi-wavelength light.
4. (CANCELED)
5. (ORIGINAL) The Raman optical amplifier according to claim 1, wherein when the input power of the multi-wavelength light changes, said auxiliary light controller changes the optical power of the auxiliary light based on the change of the multi-wavelength light in such a way as to suppress the fluctuations in output power of the multi-wavelength light outputted from said optical amplification medium.

6. (ORIGINAL) The Raman optical amplifier according to claim 1, wherein if the input power of the multi-wavelength light changes from a first input level to a second input level, said auxiliary light controller changes the optical power of the auxiliary light from a first steady state corresponding to the first input level to a second steady state corresponding to the second input level with a response time determined by the propagation time of the multi-wavelength light or the pumping light in said optical amplification medium.

7. (ORIGINAL) The Raman optical amplifier according to claim 6, wherein the response time is proportional to the propagation time of the multi-wavelength light or the pumping light in said optical amplification medium.

8. (ORIGINAL) The Raman optical amplifier according to claim 1, wherein if the input power of the multi-wavelength light changes from a first input level to a second input level, said auxiliary light controller changes the optical power of the auxiliary light from a first steady state corresponding to the first input level to a second steady state corresponding to the second input level with a response time determined by the length of said optical amplification medium.

9. (CURRENTLY AMENDED) The Raman optical amplifier according to ~~claim 4~~claim 1, wherein the change in input power of the multi-wavelength light is due to the change in the number of wavelengths of the multi-wavelength light.

10. (ORIGINAL) The Raman optical amplifier according to claim 1, wherein if the input power of the multi-wavelength light changes, said auxiliary light controller changes the optical power of the auxiliary light taking an influence by stimulated Raman scattering between a plurality of segments of signal light included in the multi-wavelength light into consideration.

11. (CURRENTLY AMENDED) The Raman optical amplifier according to claim 1, wherein

said auxiliary light controller further comprises:

a storage unit storing pattern information indicating ~~the~~a changing pattern of the optical power of the auxiliary light using information indicating the change in input power of the multi-wavelength light as a retrieval key; and

a drive control unit extracting corresponding pattern information from said storage

unit based on ~~the~~a detected change in input power of the multi-wavelength light, and driving said auxiliary light source based on the pattern information.

12. (ORIGINAL) A Raman optical amplifier that amplifies multi-wavelength light, comprising:

an optical amplification medium into which the multi-wavelength light is inputted;

a pumping light source supplying pumping light to said optical amplification medium;

an auxiliary light source generating auxiliary light with a wavelength shorter than a center wavelength of the multi-wavelength light;

an optical device guiding the auxiliary light to said optical amplification medium in the same direction as that of the multi-wavelength light;

a detector detecting the wavelength arrangement of a plurality of segments of signal light included in the multi-wavelength light; and

an auxiliary light controller controlling the optical power of the auxiliary light based on the change of the wavelength arrangement of the plurality of segments of signal light detected by said detector.

13. (CANCELED)

14. (CURRENTLY AMENDED) The Raman optical amplifier according to claim 1, wherein

~~the~~ relative intensity noise of the auxiliary light is set to an amount such that ~~the~~a noise characteristic of the multi-wavelength light outputted from said optical amplification medium ~~may~~ is not be affected.

15. (ORIGINAL) The Raman optical amplifier according to claim 14, wherein the relative intensity noise of the auxiliary light is -130dB/Hz or less.

16. (ORIGINAL) The Raman optical amplifier according to claim 1, further comprising de-polarization means for de-polarizing the auxiliary light.

17. (CURRENTLY AMENDED) A Raman optical amplifier that amplifies multi-wavelength light, comprising:

an optical amplification medium into which the multi-wavelength light is inputted;

a forward pumping light source supplying forward pumping light to said optical

amplification medium;

a backward pumping light source supplying backward pumping light to said optical amplification medium; and

a controller controlling the optical power of the forward pumping light based on the input power of the multi-wavelength light,

wherein said controller changes the optical power of the forward pumping light with a prescribed response time based on a change in input power of the multi-wavelength light.

18. (NEW) A Raman optical amplifier that amplifies multi-wavelength light, comprising:

an optical amplification medium into which the multi-wavelength light is inputted;

a pumping light source supplying pumping light to said optical amplification medium;

an auxiliary light source generating auxiliary light with a wavelength shorter than a center wavelength of the multi-wavelength light;

an optical device guiding the auxiliary light to said optical amplification medium in the same direction as that of the multi-wavelength light; and

an auxiliary light controller controlling the optical power of the auxiliary light based on the input power of the multi-wavelength light,

wherein, if the input power of the multi-wavelength light changes from a first input level to a second input level, said auxiliary light controller changes the optical power of the auxiliary light from a first steady state corresponding to the first input level to a second steady state corresponding to the second input level with a response time determined by the propagation time of the multi-wavelength light or the pumping light in said optical amplification medium.

19. (NEW) The Raman optical amplifier according to claim 18, wherein the response time is proportional to the propagation time of the multi-wavelength light or the pumping light in said optical amplification medium.

20. (NEW) A Raman optical amplifier that amplifies multi-wavelength light, comprising:

an optical amplification medium into which the multi-wavelength light is inputted;

a pumping light source supplying pumping light to said optical amplification medium;

an auxiliary light source generating auxiliary light with a wavelength shorter than a center wavelength of the multi-wavelength light;

an optical device guiding the auxiliary light to said optical amplification medium in the same direction as that of the multi-wavelength light; and

an auxiliary light controller controlling the optical power of the auxiliary light based on the input power of the multi-wavelength light,

wherein, if the input power of the multi-wavelength light changes from a first input level to a second input level, said auxiliary light controller changes the optical power of the auxiliary light from a first steady state corresponding to the first input level to a second steady state corresponding to the second input level with a response time determined by the length of said optical amplification medium.

21. (NEW) An apparatus comprising:

an optical amplification medium through which a multi-wavelength light, an auxiliary light and a Raman pump light travel, wherein the auxiliary light has a wavelength shorter than a center wavelength of the multi-wavelength light, the multi-wavelength light and the auxiliary light both travel through the optical amplification medium in the same direction, and the Raman pump light causes Raman amplification of the multi-wavelength light to occur in the optical amplification medium as the multi-wavelength light travels through the optical amplification medium; and

means for changing an optical power of the auxiliary light with a prescribed response time based on a change in the input power of the multi-wavelength light.